

# FROM EPR TO IPAD

JOACHIM WALLBERG



## Joachim Wallberg

- 12 year as healthcare-tech innovator with broad experience in many aspects of healthcare oriented work. Specializing in the work related to image processes and software development for medical services. Direct experience focused on providing functional software for radiology, pathology and workflow solutions.

Designated as inventor for patent SE 532 378 Method and system for sharing data between radiology systems.

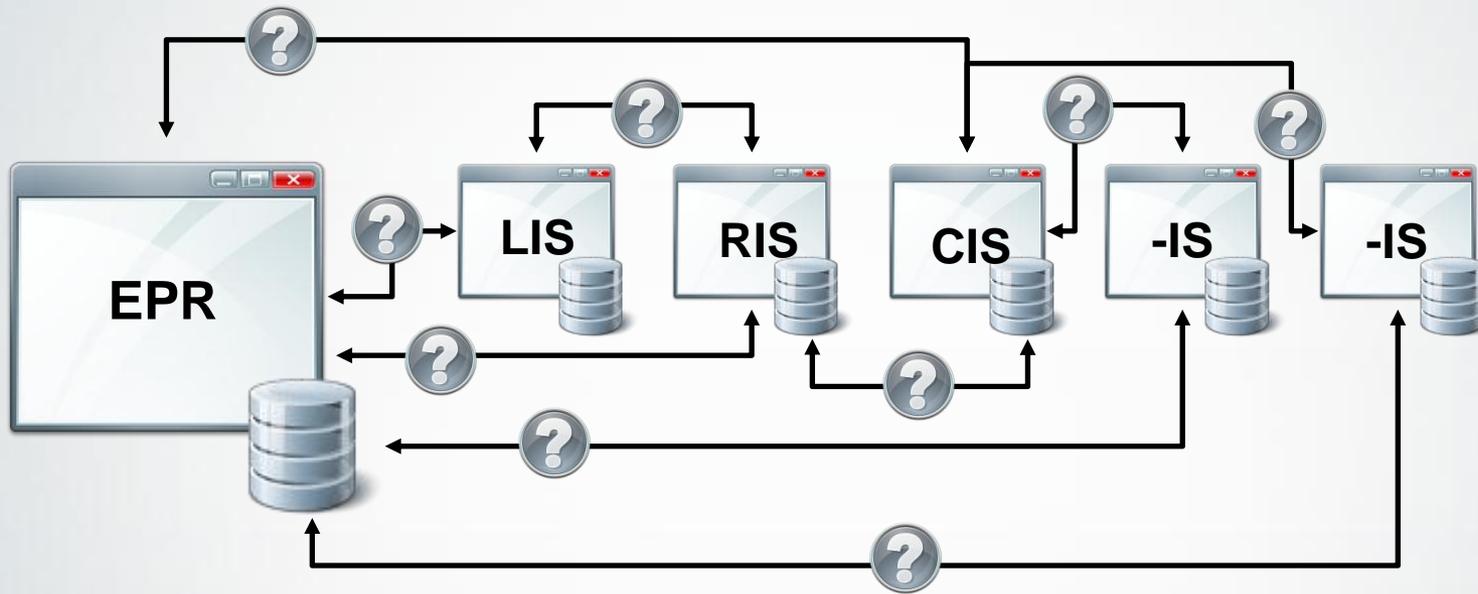
## Specialties

- Healthcare domain knowledge, Software analysis, Healthcare oriented architecture, Interaction design, Information design, Graphical design, Prototypes, Business development



# WHAT DO WE WANT?





- High complexity for integrations
- Replacing a system is hard
- Switching EPR is costly
- When we switch proprietary data is transformed to new Proprietary data format
- Not a single information model, vendor information models

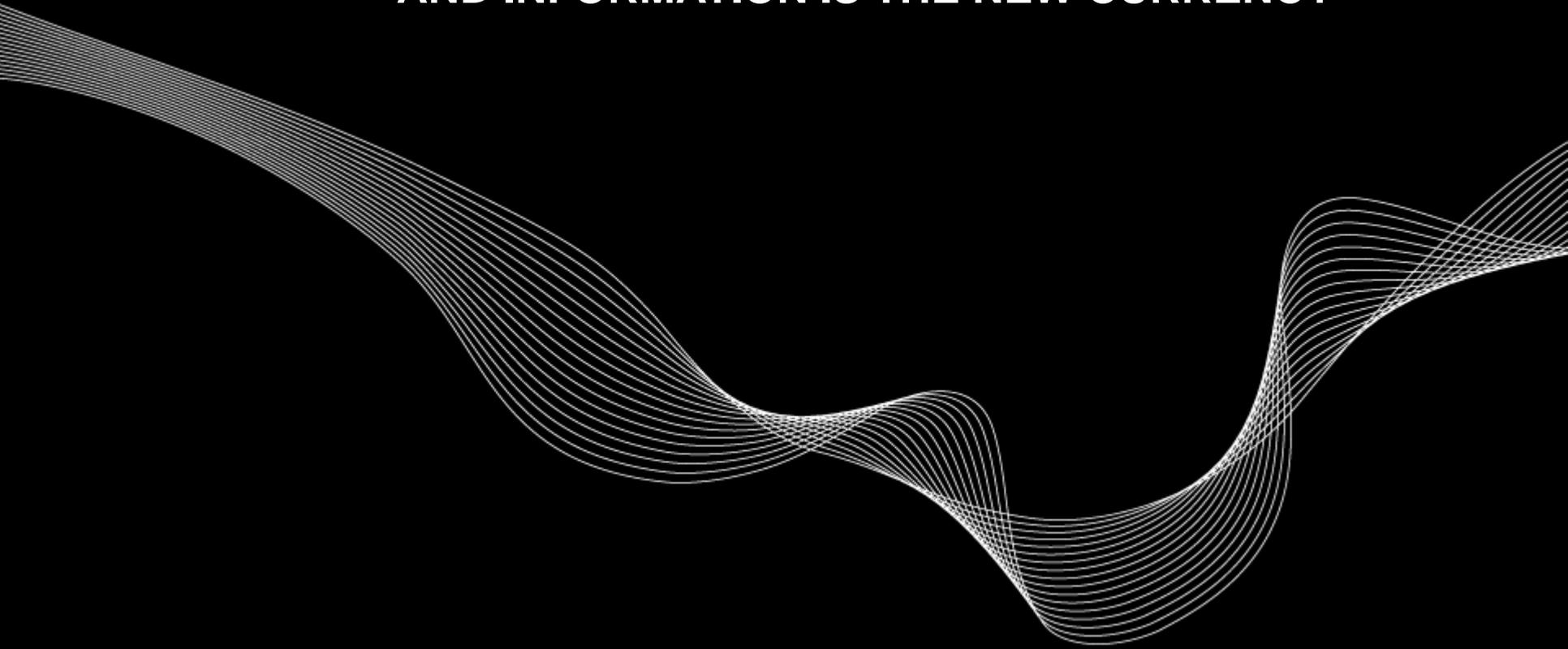


**TIME**

**IS A DEEP-SEA CREATURE AND  
IT IS NOT HELPING US**

# **DATA DRIVES OUR WORLD**

## **AND INFORMATION IS THE NEW CURRENCY**



## Perspectives

- Patients
- *Healthcare professionals*
- Healthcare executives
- Researchers

## Challenges

- *Scale*
- *Economies of Scale*
- Flexibility
- Availability & Access
- Unlocking Vendor LOCK IN



### **TRUE EXPERIENCE**

Proves that it is contrary to nature that any *single article* or *compound* can *Cure every Disease*, and it also proves that

**Nothing has ever been found to so effectually eradicate Disease**

— AS —

**DR. STEPHEN JEWETT'S**

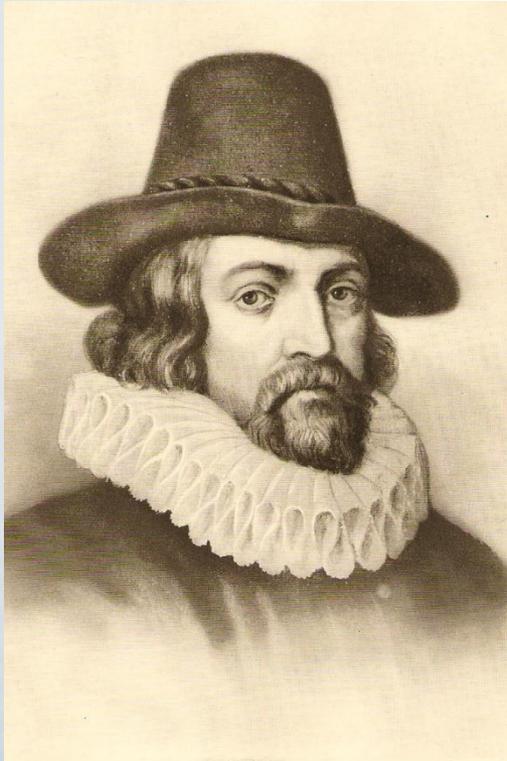
**JUSTLY AND HIGHLY CELEBRATED**

**FAMILY MEDICINES,**

Each **DESIGNED** for and **UNPARALLELED** in the **PERMANENT RELIEF AND CURE** of all diseases for which they are recommended.

**ORIGINALLY PREPARED BY ONE OF THE MOST SUCCESSFUL AND EMINENT PHYSICIANS THAT EVER LIVED.**

**Used and Recommended by Eminent Physicians of the Present Day.**



Francis Bacon, 1st Viscount of St. Alban

**Data on its own carries no meaning. In order for data to become information, it must be interpreted and take on a meaning.**

- The height of Mt. Everest is generally considered as “data”
- A book on Mt. Everest geological characteristics may be considered as “information”
- A report containing practical information on the best way to reach Mt. Everest's peak may be considered as “knowledge”

# “THE MOST VALUABLE COMMODITY I KNOW OF IS INFORMATION”

*Gordon Gekko in Oliver Stone's Wall Street, 1987*



The terms information and knowledge are frequently used for overlapping concepts.

The main difference is in the level of abstraction.

***Knowledge*** is the *highest* level among all three.

***Information*** is the *next* level, and finally,

***Data*** is the *lowest* level of abstraction,

## ■ 1971 Introduction of CT scanner

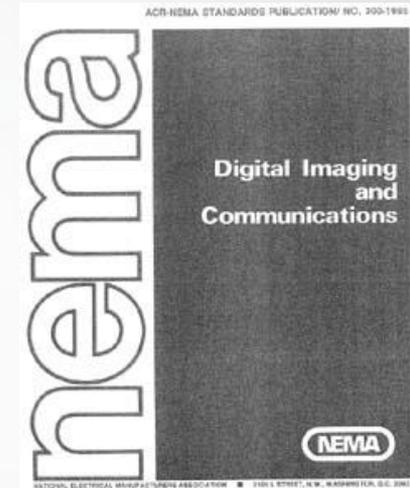
- Hounsfield and Cormack were jointly awarded the Nobel Prize in 1979.
- The first EMI-Scanner was installed in Atkinson Morley Hospital in Wimbledon, England, and the first patient brain-scan was done on 1 October 1971. It was publicly announced in 1972

## ■ 1977 Introduction of MRI

- Lauterbur and Sir Mansfield were jointly awarded the Nobel Prize in 2003.
- The first NMRI studies performed on humans were published in Nature 1977

## ■ 1985 Introduction of DICOM

- The standard, ACR/NEMA 300, was released in 1985



## ■ **Text**, small ripples

- Healthcare professionals can't write and dictate tremendous amount of data

## ■ **Images**, the build up starts

- 2D X-ray, 30 MB examination
- Echo cardiology, 60 MB examination
- 3D MRI, 150 MB examination
- CT, 160 MB examination
- Cardiac angiography, 400 MB examination
- 2D Mammogram, - 500+ MB examination
- 3D CT 500 Slice series, 1000 MB examination
- Histopathology Case, -6000 MB examination



- **Discover**
  - What do we have today
- **Assess**
  - Value to Patients, Professionals, Executives, Researchers
- **Rationalise, Consolidate, Virtualise**
  - Shall we keep all applications and systems, Storage reclamation, one platform for all data, virtualised storage
- **Share, Manage, Protect, Migrate**
  - Open standards XDS, HL7, DICOM, PDF/A...
- **Vendor Neutrality, Data Cleansing, Retention Policy**
  - Intelligent storage platforms DOS/HCP, Open protocols, HTTP/S
  - Normalization and Information life management
- **Run, Report, Analyse, BI, EPR, Information Governance**
  - Patient centric view, CAD, Compile specific CDAs for a patient visit

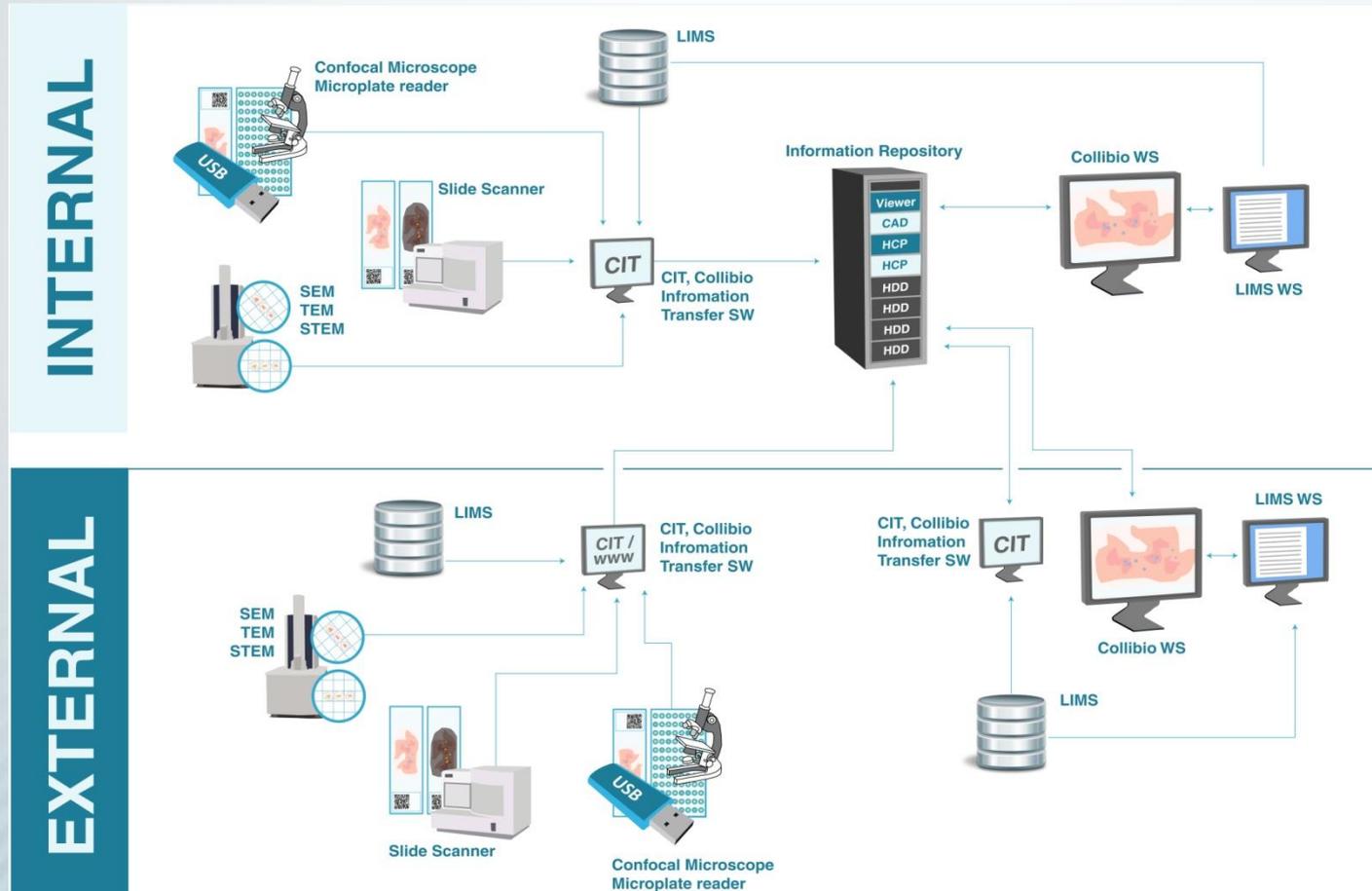
## Data and Information

- Healthcare is all about data today
- For optimal care information needs to be shared
  - An Open, standards based healthcare Infrastructure facilitates information sharing, best of breed flexibility and avoidance of vendor lock in
- An integrated Healthcare infrastructure improves workflow
  - An open and integrated healthcare infrastructure will also enable transformation of data to information, knowledge, and decision making
- Accurate decision making improves patient care, reduces cost and ultimately saves lives



**Safe place**

## THE WHOLE PICTURE



# KLINIKUM WELS

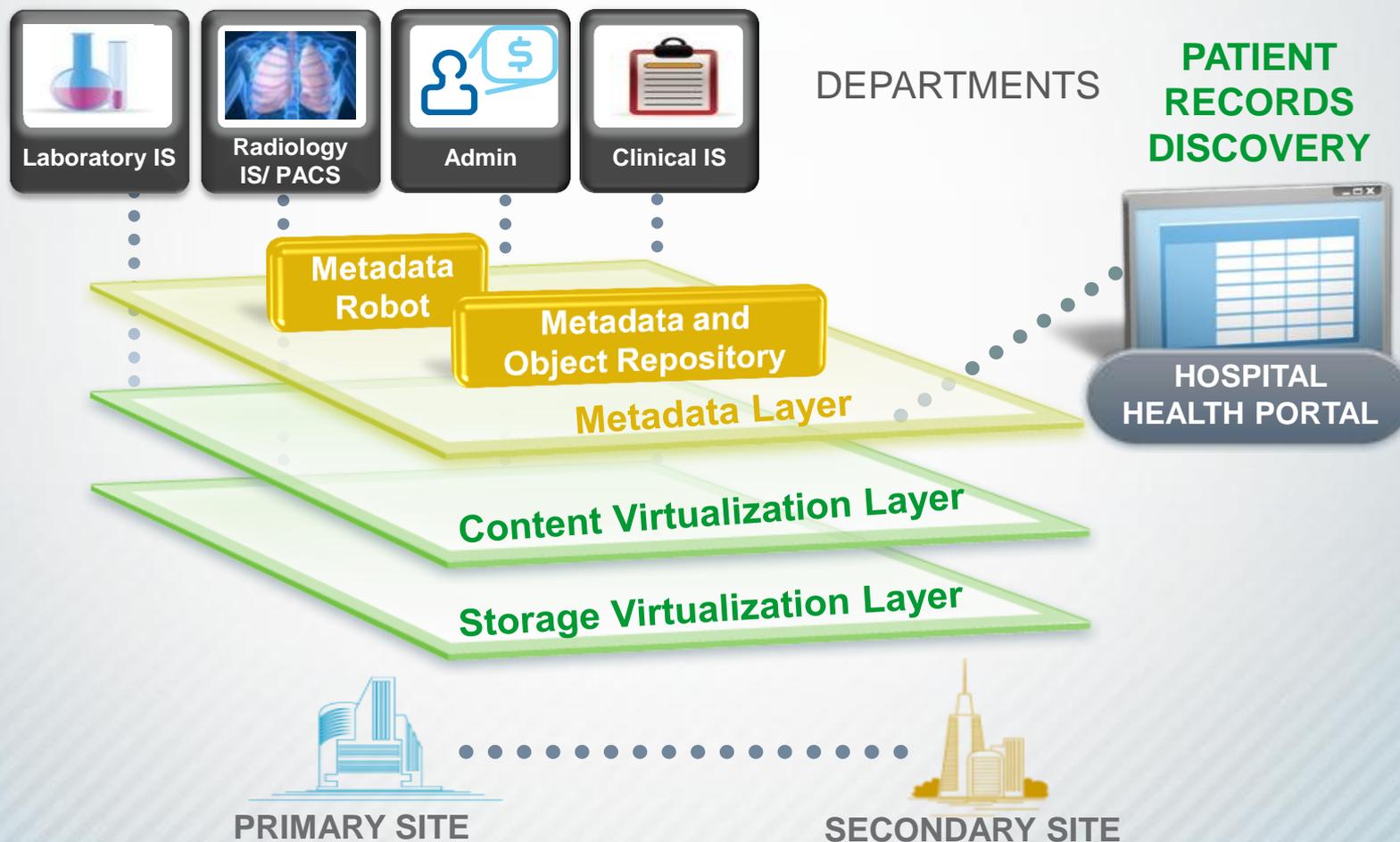
A CONTENT CLOUD USE CASE

## KLINIKUM WELS

- **The environment**
  - 5<sup>th</sup> largest hospital in Austria
  - 30 year compliant preservation
  - Aggregation, search and metadata mining across all applications
- **Why KWG chose Information Repository**
  - Intelligent data management and compliant governance
  - Improve patient care, research and education capabilities
  - Reduce cost and complexity of backups
  - Data independent of applications

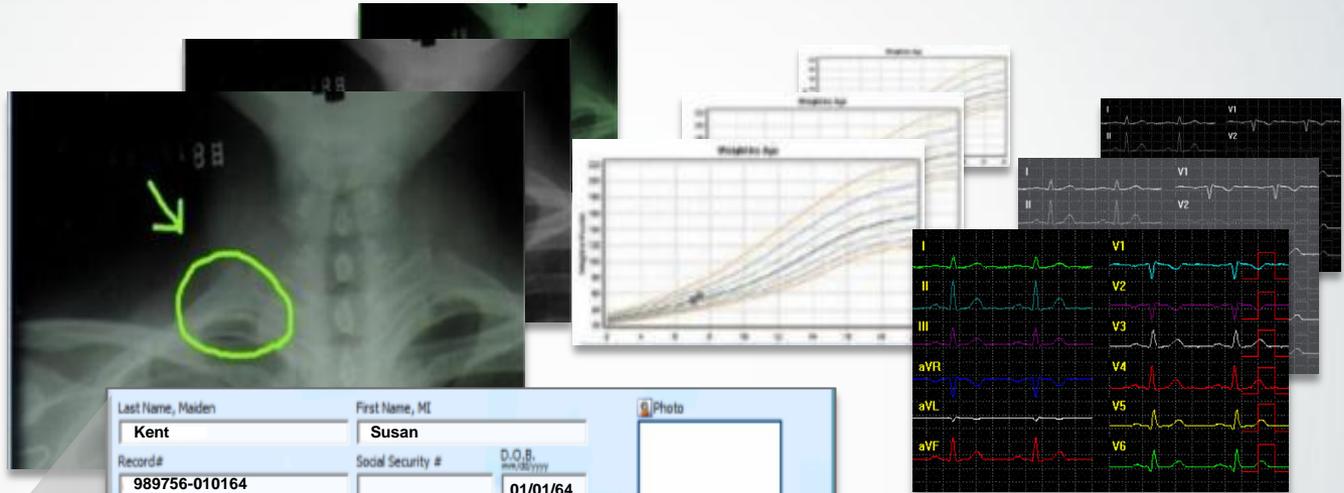


### KLINIKUM WELS SOLUTION ARCHITECTURE



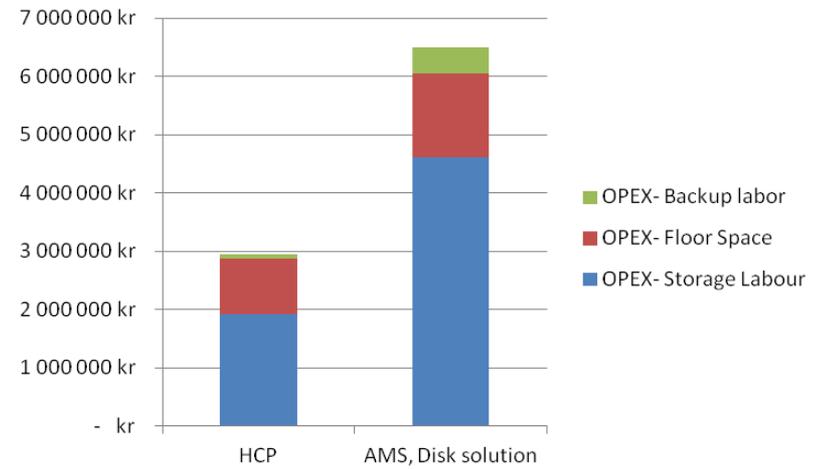
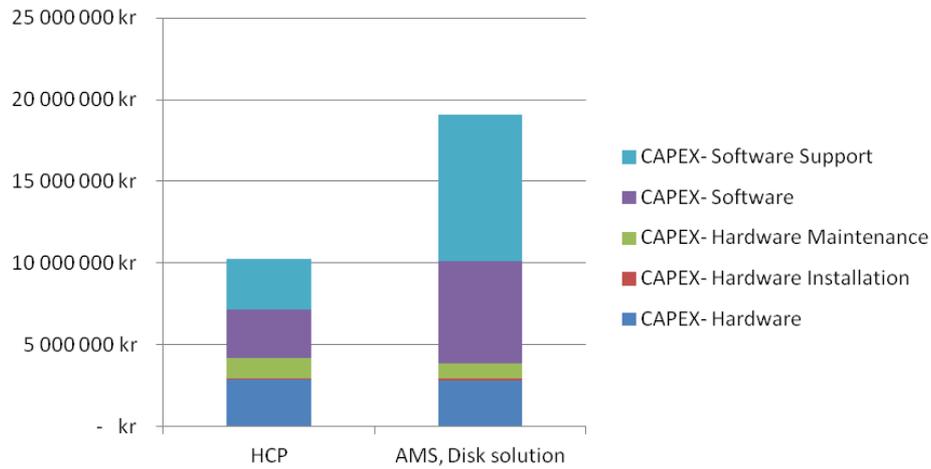
# CENTRALIZED AND INTEGRATED ACCESS TO PATIENT DATA

ACROSS  
MULTIPLE  
APPLICATIONS



Last Name, Maiden		First Name, MI		Photo	
Kent		Susan		<input type="text"/>	
Record#		Social Security #		D.O.B.	
989756-010164				01/01/64	
Current age	Sex	Marital St.	Occupation	Nationality	
	M	SIN			
Insurance/Coverage		Insurance ID			
Address		City		Add Delete Change	
39 Clark Street		Santa Clara			
Zip/Postal Code		Diagnoses			
95050		ICD-9CM ICD-10 Paste			
Fax		• RADIOLOGY LAB			
		• APPOINTMENTS			
Email		• HISTORY			
Attending Physician					
Save		Erase		Cancel	





**YOU THINK  
THANK YOU**